Patent claims

- A process for precision-machining a cylindrical inner surface, in particular a cylinder bearing surface, in which the cylindrical inner surface is subjected to at least one preliminary honing step and a precision-honing step, characterized
 - in that the cylinder bearing surface has material of different hardnesses in the axial direction,
 - in that the preliminary honing step produces a cone (11) in the cylindrical inner surface, in such a way
 - that the cone (11) widens out from a harder region (4) toward a softer region (6), and
 - in the subsequent precision-honing step, the cone (11) is compensated for again in the harder region (4) to produce a cylindrical inner surface, and
 - the cone (11) is retained in the softer region (6).
- 2. The process as claimed in claim 1, characterized in that the cone (11) of the cylindrical inner surface is produced by a honing stone (8) which runs conically with respect to the said inner surface.
- 3. The process as claimed in claim 1, characterized in that the cone (11) is produced by adjusting the honing parameters.
- 4. The process as claimed in claim 3, characterized in that the cone (11) is produced by adjusting the advance (V) of a honing tool (7') in the axial direction (9) and/or by

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adjusting the contact pressure (P) of the honing tool (7') against the cylindrical inner surface.

- 5. The process as claimed in one of claims 1 to 4, characterized in that a honing tool (18) is used with different types of honing stones (20, 22) which are deployed selectively for the preliminary honing step or precision-honing step or which are deployed selectively for different regions (4, 6) of the cylindrical inner surface.
- 6. The process as claimed in one of claims 1 to 5, characterized in that the cone (11) is introduced over a length (10) of from 20 mm to 200 mm in the axial direction (9), and a change (12) in the radius of the cylindrical inner surface of from 10 µm to 100 µm is established over this region.
- 7. The process as claimed in one of claims 1 to 6, characterized in that a second, opposite cone (30) is introduced into the softer region (6), so that a convex shape (28) is established in the softer region (6).